



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,211	11/12/2003	Pietro Erratico	854063.618D1	8271
500	7590	04/26/2005	EXAMINER	
SEED INTELLECTUAL PROPERTY LAW GROUP PLLC 701 FIFTH AVE SUITE 6300 SEATTLE, WA 98104-7092			ECKERT II, GEORGE C	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,211

Applicant(s)

ERRATICO ET AL.

Examiner

George C. Eckert II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-14 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-10 and 15 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☒ Certified copies of the priority documents have been received in Application No. 09/797,206.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment dated February 8, 2005 in which claims 1-3, 6, 9, 10, 12 and 13 were amended and claim 11 canceled has been entered.

Priority

2. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). **Please amend the first sentence to include the status of the parent application (e.g. "now US 6,693,039").**

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No.09/797,206, filed on February 27, 2001.

Claim Objections

4. Claim 6 is objected to because of the following informalities: while the amendment to claim 6 cures the previous objection, claim 6 is newly objected to as it cites "said epitaxial layer" which layer was not earlier defined. Delete "epitaxial" and insert --grown-- in its place or otherwise cure the antecedent discrepancy. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by 4,706,061 to Johnson (of record). Johnson teaches in figure 1e a structure comprising:

a buried cavity 20 in a semiconductor material body 10 (formed of Si, fig. 1a) having a shape, in cross section, in which a top wall, including a lattice having a first layer 12 and a second layer 14, is approximately parallel with a horizontal plane of the semiconductor material body, side walls slope inward from the top wall to a bottom wall (as shown in fig. 1e) and the bottom wall is approximately parallel with the top wall.

With regard to claims 3 and 8, Johnson teaches in figures 1d and 2 that the lattice of layers 12 and 14 has a plurality of interstitial openings 18 formed therein and that the openings have a rectangular shape. As to claims 9 and 10, Johnson teaches that the interstitial openings 18 are oriented at an angle of 45° to the <110> plane of the body 10 (col. 1, lines 61-68).

Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by 5,347,869 to Shie et al. (of record). Shie et al. teach, in figures 6a-g, a structure comprising:

a semiconductor body 60;

a cavity 66 formed in the body and having the claimed shape including sloped side walls and parallel top and bottom walls;

Art Unit: 2815

a cover over the cavity (layers 61 and 63) formed on the upper surface of the body; and
a lattice 62 having a plurality of openings (spaces) formed on the upper surface of the
body; and
communication openings (fig. 6(g), the spaces on either side of the cover over the cavity)
extending in the cover and the coating layers to the cavity.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson.
As discussed above, Johnson taught the device of claim 1 but did not expressly disclose that the first lattice layer was silicon dioxide and the second layer was silicon nitride or that the plurality of openings in the lattice were square in shape. However, both of these limitations are considered obvious over Johnson. Regarding the use of silicon oxide rather than nitride, silicon oxide is a well-known dielectric material in the art that is frequently used as a passivation layer in place of nitride. Oxide may be deposited by several means including inexpensive thermal growth and provides benefits such as better conformal coverage when doped. Regarding the formation of the openings as square in shape, Johnson teaches in figure 2 that the openings 18 are formed primarily as rectangles having a width of 2 μ m, but does show that the length of the rectangles varies. As such, it is considered obvious that as the openings near the corner of the

Art Unit: 2815

structure, their lengths will shorten and the openings will become square in shape. Alternatively, a change in shape is not considered a patentable feature absent some unexpected results achieved by the new shape. In all, the limitations of claims 2 and 7 are considered obvious in light of Johnson.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of 6,512,283 to Davies (of record). Johnson taught the device of claim 3 as discussed above but did not teach that the plurality of openings in the lattice were filled with tetraethyl orthosilicate (TEOS). Davies teaches in figures 8 and 9 a substrate 10 having a cavity 200 and a lattice 15 formed thereon wherein the lattice is filled with TEOS layer 55.

Johnson and Davies are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the device of Johnson with TEOS filling the openings 18. The motivation for doing so, as is taught by Davies, is that filling of the openings isolates that cavity from contamination (col. 6, lines 17-19). Also, the use of TEOS forming process provides a partial vacuum in the cavity and thus reduces parasitic capacitance between the active device and the substrate (col. 6, lines 26-30). Therefore, it would have been obvious to combine Johnson and Davies to obtain the invention of claim 4.

Allowable Subject Matter

8. Claims 12-14 are allowed. Claims 5, 6, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 1-4 and 7-10 have been considered but are moot in view of the new grounds of rejection. Applicant's arguments filed February 8, 2005 regarding claim 15 have been fully considered but they are not persuasive. Applicant argues that Shie et al. fails to teach "a cover over the cavity comprising a lattice layer having a plurality of openings" because the "lattice" of Shie is a resistor that is wound on the layer 61 and merely doubles back and forth, forming a unitary and continuous strand, not a lattice. However, this is too narrow a reading of the term "lattice." As defined by Merriam Webster's Collegiate Dictionary, 10th Ed., a "lattice" includes "a network or design resembling a lattice." As such, the layer 62 of Shie, as it winds back and forth on the layer 61, forms a lattice simply in having its network or design resemble one. In all, the arguments are not persuasive.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


Art Unit: 2815

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (571) 272-1728.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


GEORGE ECKERT
PRIMARY EXAMINER